

ABBE (R.)

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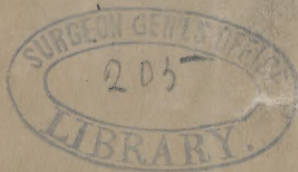
BY

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ON
DUPUYTREN'S FINGER-CONTRACTION;
ITS NERVOUS ORIGIN.*

THE one deformity of the hand which has of late most interested surgeons is known as Dupuytren's contraction of the fingers—a deformity which, till his day, had been regarded as irremediable, and which even to-day is so considered, with the vicious contractions from tendon defects, by the majority of physicians and surgeons to whom the scanty literature of the subject is unknown.

It was indeed an inspiration on the part of that surgeon, whose name will always be honored by the association, that enabled him to distinguish between this disease of the palmar aponeurosis and others that resembled it closely. It was the inspiration born of hard work in a man whose energy was never tired, and who seemed to see almost all there was in the new subject at the first discovery.

If we accept the popular idea of the palmar fascia as shown in many text-book illustrations, and spoken of by some authors, we shall conceive of it only as a fan-shaped,

* Read before the New York Academy of Medicine, April 17, 1884.

fibrous expansion, with its narrow point touching the annular ligament of the wrist where the tendon of the palmaris longus is inserted into it, while its expansion covers the breadth of the palm at the roots of the fingers, where each of the four bundles into which it has separated divides into two leaflets, attached to the sides of the proximal phalanx of each finger. This, it is true, is the grosser part of the fascia, the glistening fibrous sheet of tissue filling the space over the flexors, the palmar arches, and the muscles. But, if we dissect with care a very lean hand, we find more that concerns us in understanding the disease now considered.

Continuous with the coarse part of the fascia alluded to is a layer or network of the same white fibrous structure—more open, looser, and thinner—covering the outer and inner sides of the palm far beyond the lines of the flexor tendons, and presenting well-marked borders, especially in the fold between the base of the thumb and the index-finger, where it gives a clean, crescentic edge, while over the palmar surface of each finger the same delicate layer continues from its base far out over the tendons toward its tip.

At every point of the grosser and finer parts of this fascia some of the fibers are seen to come toward the surface and terminate in the skin, thus interweaving through the tangled subcutaneous cellular tissue a network which effectually prevents the skin from sliding. The gross white fibers are disposed lengthwise of the palm, but everywhere cross-fibers are seen, delicate but firm, at the web of the fingers, where they constitute the fibers of Gerdy (so called by the French), and in the fold between the thumb and the index-finger. These, as we shall soon see, are often the seat of this malady, though usually the long fibers are first affected.

With this understanding of the anatomy, let us consider the history of the disease. Though Sir Astley Cooper undoubtedly recognized it, it was an unknown disease to the profession until Dupuytren described it, in 1832, giving its clear-cut characteristics as distinguished from contraction of tendons, which to the ordinary observer it resembles, being classed with the "main-en-griffe," or claw-hand, resulting either from traumatism, from abscesses, or from nerve disturbances.

He had the good fortune to dissect a hand so affected, and but a dozen other dissections of marked cases have since been made. They all verify entirely what he found—namely, that there was a tightly drawn band of fibrous tissue, an enlarged fasciculus of the palmar fascia, lifted far above the flexor tendons and drawing down the fingers at one or more points in the palm; that the skin was quite adherent to the band in places; that the tendon itself lay below it, in its normal position, glistening white, and unaffected by the morbid process; and that the bones and joints were entirely free from disease.

He located the disease in the fascia only, and most surgeons agree in this view, though M. Fort thinks it a general inflammation of the cellular layer of the subcutaneous tissue, and not of the aponeurosis alone, because, as he says, this contraction runs down on the fingers and is sometimes found on the thumb, while the palmar-aponeurosis tongues terminate practically at the phalanges.

Thus it is evident he shares with many the erroneous views of the narrow limits of the fascia. Eulenberg and Maligne have insisted that the thumb has no connection with the palmar fascia. Practically the entire palm is very rich in tissue which has for its base white fibrous tissue, and it is impossible to separate this from the simple cellular tissue.

In an excellent review of the subject, eight years ago,

Dr. Post expressed the opinion that the sheaths of the tendons were also involved in some cases.

Goyrand's dissections proved that they were sometimes involved at the root of the fingers when the fascia draped over the tendon beyond the arch of exit. The tendon itself in these cases is still healthy, though tied down by external fibers.

Contrary to Dupuytren, Goyrand held the new bridles to be entirely new tissue. It is a matter of little importance, as the microscopical structure, according to Richer (the only observer), shows it to be simply hyperplasia of the white fibrous tissue.

The true "Dupuytren contraction" rarely appears before middle life. This observation, noted by all writers on the subject, is verified by the admirable paper by Dr. W. W. Keen, of Philadelphia, published two years since, in which he reports a collection of 105 cases from every possible source, and finds the average time of development is at forty years. It is rare in women—not oftener than one case in five or six.

From a clinical point of view, the cases present themselves about as follows: The sufferer, otherwise in good health, notices a slight hardness of the palm of one hand—either a small kernel, like a split pea, fixed beneath the skin at the center of the middle transverse crease, or else a hard cord, at the same site, in the line of the tendon of the ring-finger. It is usually painless, and perhaps for years scarcely excites curiosity until the ring-finger or little finger, as the case may be, resists being straightened out with the others.

Several nodes and bands may show themselves, or there may be only one from first to last. The band can early be felt beneath the skin before it can be seen. Then in time it forms a ridge, and finally, after progressing and shorten-

ing for from two to twenty years, it appears like a tight string to a bow, extending from near the wrist to the proximal joint of the finger, which it draws over until it approaches the palm. The skin is lifted from a quarter to half an inch from its former level, adheres to the band in parts, is puckered and wrinkled, and dimpled where fibers of attachment hold it back against the drawing tendency of the band toward the wrist.

It is with great difficulty at first that one can convince himself that this is not a tendon below the skin; indeed, Mr. Adams, who has given our best English *résumé* upon the subject, says he cut at first many times, believing he was cutting tendons. I have been asked by one of our most eminent surgeons, while my knife was just ready to cut the band, "if I was *really* sure I was not cutting the flexors."

Three convincing proofs are these: The flexor tendons are bound down at the metacarpo-phalangeal articulations by such arched fibrous sheaths as *can not* stretch to allow them to rise from their beds, while it is exactly at this point that the fascial bands are most prominent, and certainly rise from half to three quarters of an inch above the tendons.

Secondly, the tense cords are not always in the line of the tendons, sometimes lying between instead of over them and forking at the web of the fingers by the tightening of the fibers of Gerdy, so as to take firm grip on the neighboring sides of the two fingers, while in some cases rigid cords appear on the thumb or in the web between it and the index, entirely out of the course of any tendon.

Thirdly, when the bands have been divided and the fingers stretched, the patient has the power at once to put the flexors in action and close a tight fist. Could he do this if the tendon had been cut?

The malady affects, by choice, the ring and little fingers of either hand. In Keen's collection of 105 cases, the ring-finger suffered in 88, the little in 77, the middle in 45, the index in 13, the thumb in 9.

Within from six months to a year or two, however, after the first hand is seized, the opposite one is affected in a large majority of cases; and by preference the malady fixes itself on the corresponding part.

Throughout the literature of the subject I find little reference to the associated pains, and, though I am aware that many cases are without it, there are many where it is an important symptom.

CASE I.—In the first case that came under my notice, in 1881, the successful termination of which I reported in the "Illustrated Quarterly of Medicine and Surgery," in 1882, there had been contraction of the left little finger for seven years, and of the right ring-finger for one year. The latter had given the patient increasing pain for a few months before I saw him, so that he was obliged to give up work, and, as I then reported (and repeat here, as it illustrates a point in the theory of the aetiology of the disease), "for two months this hand in the right palm had been so constantly in pain that he could not move this hand up to touch his head without almost unbearable suffering, and at times, especially if the palm was struck, it was much worse." (See Fig. 1.)

As the left finger had shown prior trouble and was drawn most into the palm, I operated on it two weeks before the other by subcutaneous sections. To the patient's great surprise and my own, the right hand ceased to be painful immediately after the operation on the left, and he found on the following day that he had been able to lie at night with his right hand behind his head and sleep on it without pain, which he had been unable to do for many months. He could also swing this hand over his head, brush his hair with it, and do various things that for months past would have caused him great suffering; and yet this hand had not been touched. I shall refer again to this

case again after speaking of others. It is sufficient to say, I subsequently operated on the right stiff finger also, and the pa-

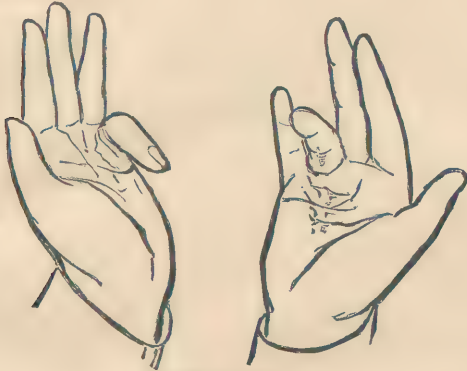


FIG. 1.

tient remained perfectly cured and resumed his work as a cloth-cutter six months afterward.

I will ask you to follow me now in three more well-marked cases, and then speak of some others in a group.

CASE II.—G. C. H., aged fifty-eight, a cloth-cutter, showed Dupuytren's contraction of both hands, with other extraordinary symptoms.

He had been a cutter for twenty years. Fifteen years ago he first noticed contraction of the left ring-finger, and thought it had come because he helped squeeze the large shears with this hand in cutting very thick cloths.

The contraction steadily increased, but was painless at first. Very soon afterward the right ring-finger began to draw up, and about the same time he began to have pain in the back, below the loins, which has grown worse for fifteen years.

He continued to work till three years ago, when his lame back and contracted finger prevented it.

One year before I saw him he applied to Dr. Seguin for the

distress in his back, the fingers being a very secondary matter. Dr. Seguin gave him medicines and applied various counter-irritants to his back, even making repeated cauterizations with the actual cautery. He then tried packing his dorsal spine with ice-bags, keeping him recumbent for a fortnight, believing there was a spinal lesion, probably a pachymeningitis. It gave no relief. Electricity, static and galvanic, was then applied by Dr. Gibney. Continued faithfully for a long time, this gave a little relief to the back pain.

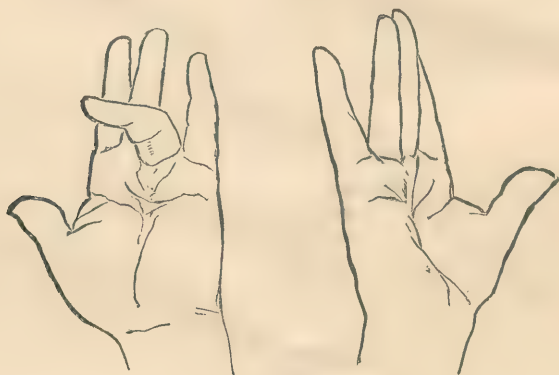


FIG. 2.

The case seemed intractable, and Dr. Seguin and Dr. Gibney referred the patient to me, in view of the case I had published, to see if I thought the contracted fingers were a factor in the nervous disturbance. I had little doubt it was so.

On examination, I found his worst complaint was of the rhachialgia. He complained of great pain, as of subacute rheumatism, in the lumbar and two or three lower dorsal vertebræ, most marked on rising from a seat or on attempting to stoop. To use his own words, "he could not pick up a thousand-dollar bill if it was on the floor before him, because of the pain and stiffness." Every motion he made bore witness to the truth of his statements. He had never had rheumatism or gout, nor had his father or mother.

The ring-finger of each hand was contracted, as shown in the cut (Fig. 2); the left more so than the right. On the right the middle finger was also somewhat involved. The skin was much puckered over the contracted fascial band from the second phalanx to the upper part of the palm. The band was very distinct and unyielding.

June 24, 1882.—I operated under ether, dividing the left band by six subcutaneous cuts, and the right by four. These rectified the attitude of the fingers perfectly, and I put them on straight splints. The subcutaneous cuts healed immediately, but the patient had considerable pain in the fibrous structures about the palm and fingers, which became thickened, tender, and somewhat stiff in their new position. It was some weeks before the subacute inflammatory stiffness subsided.

Meanwhile, what about his back? Even so soon as a day or two after the operation he spoke of an amelioration of the pain. It improved daily until, on July 4th—the tenth day—he expressed the greatest delight and surprise that his back hurt him but little, and he “could now stoop and pick up that thousand-dollar bill, or anything else.” I tried him with a small object, and he could stoop freely.

For two years he had not been able to dress himself on account of the pain, and now, on the tenth day, he said, except I had his fingers on splints, he could dress himself.

I have watched him for nearly two years. In fact, he has haunted me fortnightly at my clinics and office, to express his gratitude and show his continued health.

All pain entirely left him, and has never returned. The fingers were somewhat rigid as regards complete flexion for nearly a year, but have now been perfectly restored, and he can shut them tightly down into the palm.

CASE III.—I. H., aged fifty-seven, a Boston gentleman, was kindly referred to me by Dr. Fordyce Barker for double Dupuytren contraction. His mother had some contraction of the fingers, coming on after the age of fifty years, for which, he remembers, she used to sleep with a rubber ball in her hand to prevent further contraction. She also had some trouble in one

knee, which became stiff in a flexed position. She had never had gout in her feet.

The patient's father never had gout or rheumatism. Nine years ago there began a contraction of his palms, first in the right hand, involving the ring and middle fingers, very soon after of the left also. It was usually without pain. The left ring-finger gradually drew down, until three years ago its tip touched the palm. Two years ago Dr. Twitchell, of Keene, N. H., made one subcutaneous cut of the band in the palm and released it partially, so that it stood as now shown (Fig. 3), and it had since kept all that was first gained.

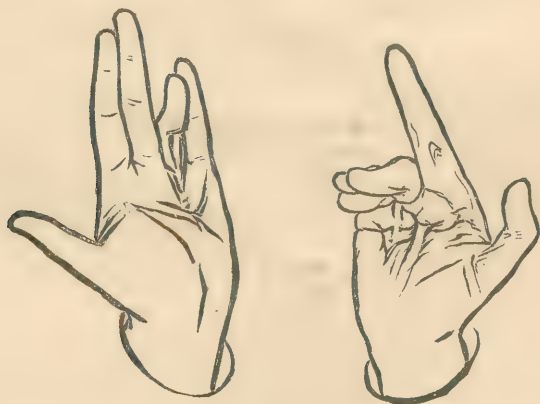


FIG. 3.

The right hand had slowly progressed until every finger was involved as follows:

One sharp crescentic band stretched tightly in the web between the thumb and the index-finger from base to base, with a spur running up on the first joint of the thumb. This held the thumb rigidly in toward the palm. Another band, inserted into the skin near the second joint of the index, followed up the palm in the line of the flexor tendon, to the thenar eminence, with a spur into the center of the palm. A solid band extended

from the base of the second phalanx of the middle and ring fingers straight up the center of the palm nearly to the annular ligament, and one ran from the palm to the little finger.

On the left hand one rigid band stretched to the ring-finger, and one between the bases of the thumb and the index.

The deformity was very great, and, besides, there had been several times yearly an attack of painful subacute swelling of these fingers, especially at the joints, keeping him awake nights, and relieved by no anti-rheumatic remedy except the French preparation of Dr. Laville.

The patient had therefore come to brood over the discomfort and unsightly appearance, and was giving up his favorite pastimes of driving, whist, and Shakespearean recitations. He could not sweep in a trick of cards, grasp a goblet of water, put on a glove, etc., and insensibly it had produced a decided impression on his spirits.

On February 26, 1883, I operated under ether on his worst hand only. The bands were all cut at points of tension, beginning nearest the wrist, and repeated until the fingers were released. Adhesions to the skin and deeper parts prevented any one cut from doing all the good, so that when all the bands were released I found I had made twenty-five subcutaneous cuts. (See Fig. 4.) The hand was dressed antiseptically and invested with plaster of Paris, all the fingers being extended. The patient began to come out of the anæsthesia before I had



FIG. 4.—THE RIGHT HAND OF THE PATIENT WHOSE HANDS ARE SHOWN IN FIG. 3. The dotted lines indicate the contracted fascial bands, and the heavy cross-lines the twenty-five subcutaneous sections.

dressed the hand, and involuntarily closed his fist with the greatest tightness, showing the flexors to have been untouched by the cutting.

The local pain from the unwonted extension was severe for two days, but lessened gradually until the tenth day, when an increase suddenly took place resembling subacute rheumatism of the various knuckles. He took colchicum and iodide of potassium, and his favorite "Laville," but without benefit. One or two fingers had to be released from all restraint before it was endurable, the patient having tossed in bed several nights in spite of morphine in moderate quantities.

The cuts all healed at once, but a firm, resisting state of the whole fascia investing the hand ensued, with œdema, joint swelling, and pain, but no cellulitis or dermatitis. Sedative lotions and anointing gave him ease. Brief immersion in hot water made them temporarily more supple, and was repeated several times daily. The splints were lightly bound on at intervals.

It was two weeks before the hands began to quiet down. The fingers retained a somewhat stiff, fibrous investment, which prevented flexion at first, but by degrees this has disappeared and excellent flexion has resulted.

It is now a year and two months since, and the patient has kept every particle of extension gained by the sections, with an almost complete return of the power of flexion. He is able to make a fist, bringing the tips of all but the little finger into the palm by voluntary effort.

The joint of the little finger had been so surrounded by old dense fibers that I preferred not to cut deep among the tendons, so it was but half released. But now the slight flexion looks more natural than a straight little finger.

Quite as important as the local change is the fact volunteered by the patient's wife, and corroborated by him, that he has not been so well in general for many years as since the hand was released.

There has been a gain in flesh, his nerves are quiet, his

mind is serene, he sleeps well at night, and never has pain in the hands.

CASE IV.—F. S., a gentleman of sixty years, whom Dr. James Knight very kindly referred to me with contracted little and ring fingers of each hand. Fifteen years ago he sustained

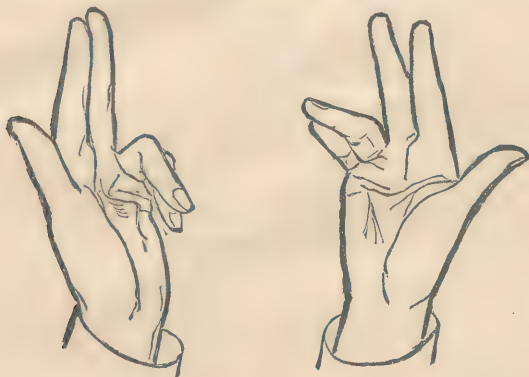


FIG. 5.

a slight cutaneous laceration at the middle flexion-crease of the right little finger while helping to carry a trunk. Within two months a slight buncy swelling just above it and a little drawing of the finger were noticed. Dr. Sayre, the patient said, had tried to straighten it by a posterior splint and rubber band, without benefit. Within the next year the little finger of the opposite hand took on the same action at the same point, and the ring-finger of the right hand also, but not until five years later did the ring-finger of the left hand take on its contraction. (See Fig. 5.)

In 1871, 1874, and 1876 the bands were divided subcutaneously at one or two points each by Dr. Hammond and Dr. Stephen Smith, but no splints were used and recontraction took place.

There has never been pain in the parts. The patient neither

inherits nor has acquired rheumatism, gout, or other taint. Each hand presents a dense subcutaneous band in the palm, running from near the wrist to the neighboring sides of the ring and little fingers, very symmetrical, though the left one draws down most. No amount of pulling can extend them farther.

February 1, 1884.—I divided the bands by Adams's subcutaneous method in each hand, the patient being etherized. On cutting the bands one can appreciate that, although so much like a tendon in appearance, it is a tense, ribbon-like band, that the point of the knife quickly cuts through. I always prefer passing the knife between the skin and the fascia and cutting downward.

At the web of the fingers the cross-fibers bound the fingers rigidly together, but yielded beautifully to subcutaneous cuts, letting the fingers gape widely apart. After the bands disappeared two of the joints were found to have a moderate extracapsular fibrous thickening, and had to be forcibly extended. Twenty cuts were necessary in each palm. The hand was dressed antiseptically, and rigidly extended on posterior splints.

He suffered acute pain for many hours after on account of the severe stretching, but was easy directly I released the fingers. I continued pretty full extension, however, for a week, during which time there ensued the same condition I had seen in each of the other cases—to wit, a general hyperæmia of the deeper tissues, especially about all the knuckles of the hand; a firmness of the aponeurotic layers, and puffiness and tenderness of the joints, all going to make up a close resemblance to sub-acute rheumatism.

I believe this to be solely due to nerve irritation, and not, as supposed by other observers, to be an attack of rheumatism.

After two weeks the patient used his splints only at night, and two weeks later only at intervals of two days.

It is now eleven weeks since the operation, and this much has been accomplished: The two ring-fingers can be extended by voluntary effort perfectly straight, and one can be already flexed so as to nearly touch the tip to the palm. The other

only flexes to a right angle with the palm. The little fingers flex and extend imperfectly, but all are gaining, and, when the dorsal fascia softens enough to give the flexors a chance to bring the fingers over, they will do their part.

The trouble following operation is not in the flexors, but in the fibrous tissues generally.

I present now briefly a group of seven other cases :

CASE V.—A retired physician, aged sixty-one, with no acquired or hereditary gout or rheumatism, and no traumatism that he remembers, began to have a contracting band in the right palm one year ago—which had been preceded by occasional pain in the same site for three or four years—with numbness and tingling, which latter abated when the band con-

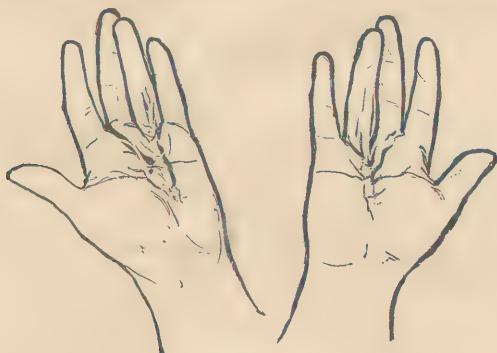


FIG. 6.

tracted, but the stitches of neuralgic pain would occasionally run up the forearm and arm. (See Fig. 6.) As his home was in a malarious section, he took quinine at the time and relieved his pain. But six months ago the left-hand ring-finger began to contract, and all the pain is now in that. The malady is progressing in that hand worse than in the other. He desires me to operate on him soon.

CASE VI.—W. H., a girl of seventeen. Has had since childhood a natural semi-contraction of each little finger, which she attributes to the habit of carrying a milk-pail on her finger-

tips, as she says a good many of the girls do in Germany and acquire the same. One year ago the right ring-finger inflamed



FIG. 7.

over the back of the second joint, implicating the extensor tendon, and matter was let out. The joint was not involved, but on the palmar surface a band began to form, and has rapidly drawn down the finger until its tip lies in the palm. (See Fig. 7.) Without ether, I cut the band subcutaneously at two points over the palmar aspect of the proximal phalanx, released the finger, and nearly straightened it. Three months later there was fair power of flexion, without recontraction, and the patient was greatly pleased.

CASE VII.—A man, aged thirty-five, had never had rheumatism, though his father occasionally had it in his knees in bad weather. Four months ago he had a sprain of the right wrist, caused by shoving a case of goods. The usual periarthrits of sprains encircled the wrist and involved the palmar aponeurosis. The little finger drew down two months ago at a right angle so tightly that no stretching could extend it, showing a rigid band on the palmar surface and a lateral thickening. I divided the cord subcutaneously, and the outside lateral band, and brought the finger nearly to complete extension.

I watched him for some time, and the flexion power returned as fast as the improved condition following the sprain would allow.

CASE VIII.—Catharine S., aged sixty-five, with no hereditary or acquired rheumatism. Contraction of the palm of the left hand began two years since, with the formation of ridges and dents in the palm, without pain. Since then a ridge has formed along the course of the little-finger tendons, and cords can be felt, but are not conspicuous, along the middle and ring fingers and the thumb, also between the bases of the index and the thumb.

There has been a burning sensation in the palm, but no neuralgia.

The right hand became affected just after the left, but the contraction only involves the fascia going to the ring and little fingers.

CASE IX.—Daniel C., aged fifty-two, a butcher. Four years ago he began to have puckering of the right palm over the ring-finger tendon. For two years there had been a tingling sensation in the little-finger and the adjacent side of the ring-finger tendons, but no neuralgia. During the four years, however, there has been a sort of writer's cramp of the thumb and the little and ring-fingers of that hand.

After attempting to write for a few moments, they stiffen up and get so cramped that he has to drop his pen and pull them straight. It only comes on in writing or prolonged grasping, and never comes elsewhere. The ring and middle fingers now have palmar cords and puckered skin. (See Fig. 8.) He never had rheumatism. He can assign no cause for the trouble, and, as it does not disable him from his duty of watchman, he refuses an operation.



FIG. 8.

CASE X.—Mr. F. B., aged sixty-one. His father had gout in his foot frequently during the latter part of his life, and his sister has enlarged rheumatic joints. One brother has a drawing down of the little finger dating from two years ago.

The patient never had rheumatism, but has had the following interesting form of neuralgia: For three or four years he has had numerous attacks of pain lasting ten days or so, extending from the vertebra prominens down each shoulder and each side of the neck to the elbow, relieved by folding the arms tightly and squeezing them, or by pressing on the shoulder.

Again, every month or six weeks for the past three or four years, the intervals being longer in summer, he has had attacks

of sudden neuralgia in the right palm, repeated every few minutes for several hours, generally at night, eased only by pressing the sound thumb into the affected palm. The pains have somewhat the character of those of locomotor ataxia. They have never occurred except in the right palm, and have not been dependent on indigestion, the weather, or other apparent cause.

Again, for two years past he has had occasional neuralgia at three points in the right leg and thigh, sharp at first, but disappearing in from three to six hours, recurring in two or three months, usually at night; and, lastly, he has for five years had hyperæsthesia of the back, so that after a bath, if one should rub his back with a towel, it would give him severe pain, while pressure gave none.

His spine is not tender; his nutrition is fair; and there is no evidence of locomotor ataxia.

He was treated in 1865 by the late Dr. Van Buren for secondary syphilis, but has never had a sign of it since.

His right hand shows two dense contracting bands of the ring and little fingers, drawing them over somewhat, and existing from six to seven years. The left has three contracted bands—to the ring, little, and middle fingers—in the palm, well marked, but not flexing the fingers.

He is able to support himself by light work, and will not take time for treatment at present.

To what conclusion does the study of these cases bring us?

One will notice, first of all, a decided prominence of nervous manifestations in the majority of these cases resembling spinal reflex action, and I will venture to assume the following working hypothesis as capable of explaining fully the symptoms observed in this disease:

First, A slight traumatism, often entirely forgotten.

Second, A spinal impression produced by this peripheral irritation.

Third, A reflex influence to the part originally hurt, producing insensible hyperæmia, nutritive tissue disturbances,

and new growth, shown in the contracting bands of fascia and occasional joint lesions resembling subacute rheumatism.

Fourth, Through the tense contractions, a secondary series of reflex symptoms, neuralgias, general systemic disturbance, and a reflection of the trouble to the corresponding part of the opposite hand.

If we can prove these, it will give, to my mind, an agreeable substitute for the now commonly accepted theory of gout, a blood disorder, as a cause.

The disposition of the profession is to regard any joint inflammation of an acute or subacute form as of rheumatic or gouty character—a sudden accession of lactic acid, uric acid, or other chemical irritant. I desire to call attention to the nerve theory of acute rheumatism set forth by Dr. J. K. Mitchell, of Philadelphia, in 1831 and 1833, and afterward elaborated by Frorie and Canstatt, which had for its basis a valuable series of observations on such cases as sudden seizure with articular rheumatism in patients with partial paralysis from spinal injuries, Pott's disease with irritation of nerve roots, hemiplegia with central irritation, and finally a great number of acute rheumatism cases magically relieved by spinal counter-irritation, and depletion over the cervical or dorsal region, according to the limbs affected. This was the basis for the theory, now accepted, of hemiplegic arthropathies and those sometimes seen in myelitis and spinal tumors, and, finally, the more chronic forms of joint disease of locomotor ataxia.

S. Weir Mitchell says the local peculiarities of spinal arthropathies will not enable the most acute observer to distinguish them from ordinary types of rheumatism, while Charcot says the only clinical characteristic distinguishing them from common rheumatism of the joints is their limitation to the joints of the parts affected with palsy. Mitchell, again, says that wounds or any form of nerve

lesions can produce, apparently, acute articular rheumatism.

With this new light, we must take exception to that point in the argument for the gouty origin of Dupuytren's contraction, that rheumatic attacks set in sometimes after the operation for its relief. As my Cases II, III, and IV show, the rheumatism depended on the peripheral irritation of the cutting, stretching, and forced extension, while the preceding attacks had been caused by the presence of the tight contracted palmar band.

Again, Brown-Séquard says: "The peripheric signs of nerve irritation include contraction of muscles, referred sensations, pain, burning formication, etc., and altered blood supply."

You will remember that in Case IX the patient had marked writer's cramp, with tingling sensations, during the four years of the contracted fascia. In Case VII there was a burning sensation in the palm. In Cases I, II, III, V, and X, there were most important and aggravated neuralgic symptoms. Whether these were due to peripheric irritation of nerve filaments secondarily involved in the contraction, or to a central disturbance consequent thereon, each may judge for himself. But what can we say for the extraordinary relief from the rhachialgia and cervico-brachial neuralgia in Cases I and II, that had defied the most skillful treatment, but yielded at once to the removal of the peripheral cause when the bands were cut? Or the improvement in health and entire relief from articular rheumatism in the hands in Case III, during a year and a quarter since the operation?

There is in my mind little doubt that the local contraction is responsible for many of the symptoms for which it has been attributed to a gouty origin. But it will be said by the defenders of the theory, Why does it so often hap-

pen that no traumatism can be assigned to start the trouble? I would call attention, *per contra*, to the cases in which it does happen, as in the typical case No. IV, where a cutaneous laceration preceded the contraction, and in Case VII, where an arthritic sprain caused it, as well as in the very first recorded case, that of Dupuytren's wine merchant whose strained palm was the cause, and in a good proportion of other cases reported. We are always liable to receive pricking, violence, and over-straining here, and it may be only on the thousandth occasion that the nerve filament will be involved which will set up this trouble—just as tetanus follows in only a small proportion of nerve lesions.

Finally, the argument that the symmetry of the affection (so well shown in Case IV, V, and others, where absolutely the same parts of each hand were contracted) goes far to prove a gouty or blood disorder loses most of its weight when we draw attention to the frequent cases of sympathetic ophthalmia. An eye that has been injured or operated on in the ciliary region is quite likely to be followed by destructive inflammation, beginning in exactly the same situation in the well eye.

Ophthalmologists agree in attributing to the ciliary nerves the transmission of irritation to the brain center, and thence reflecting it along the corresponding nerve to the same situation in the opposite eye. In the hand we see the "labor insults," or traumatisms by pressure and so on, occurring naturally on the little-finger aspect of the palm, the cutaneous supply of which is from the ulnar nerve, reflected in a few months to the opposite hand, usually in the same position. These minor injuries are mostly forgotten as soon as made, though their effects remain.

Regarding the frequent occurrence of a family history of gout in the subjects of this affection, Dr. Keen notes that, in one hundred and five cases which he finds recorded,

mention was made of its presence or absence in only forty-eight, and of these it was said to be present in forty-two, absent in six. Certainly no such proportion as $\frac{42}{48}$ of the cases are gouty, or else the marked cases I have reported would have shown some verification of these statistics. It is probable, indeed, that in the fifty-six cases in which it is not mentioned it was mostly absent, and therefore unnoticed. Adams, whose experience entitles his opinion to the greatest weight, recently adhered to his judgment of its gouty origin in discussing the paper of Mr. Noble Smith before the Royal Medical and Chirurgical Society, while Mr. Smith, who had personally looked over some seventy patients having this affection, found the evidence was against that theory. In this opinion he was indorsed by the president of the society, Dr. George Johnson. The theory of traumatism was preferred. The seventy patients examined by him were found among seven hundred elderly people of the working classes, and included all degrees of the same trouble. Mr. Adams's *clientèle*, on the other hand, is among the upper classes largely, where gout is an almost universal legacy. In America, typical gout is comparatively rare, but rheumatism very common. In a word, it seems reasonable to think that, in considering any malady, be it cataract or enlarged prostate, or anything else, we should, on diligent inquiry, find a very large proportion of patients whose relatives or ancestors had been subject to rheumatism in this country or gout in England.

Mr. Noble Smith says also that "contraction of the palmaris longus was almost constantly present in his cases, and it was thought this might indicate a condition of nerve irritation." This is quite significant in view of the theory I have advanced.

The presence of sugar in the urine in some cases has recently been suggested by a French reporter as a possible

cause. I have examined it in only four of my most marked cases, and find no sugar; I presume its occasional appearance may be classed with transient glycosuria, which Charcot says may come from peripheral irritation, as in burns of the surface.

The favorite method of operation is that of multiple subcutaneous incisions practiced by Adams, of London, resorting to just as many as are needed to break up the continuity of the contracted band.

Mr. Adams recently said he had been obliged to make eighteen on one hand. In Case III, I was compelled to make twenty-five before the contractions were overcome, every finger being involved, while in Case IV twenty were made in each hand.

I think the number makes little or no difference, if they are done carefully. Antiseptic dressings will protect from all danger.

From my experience, one important suggestion may be drawn. Do not keep the hand over-stretched after cutting by binding it too tightly on splints. I believe the general fascial inflammation following is due to the nerve irritation incident to this on the principle of "*ubi irritatio, ibi fluxus*," and that we should do better to keep the hand only so far extended at first as not to give pain.

I have not resorted to the method of operating practiced by Busch, of Bonn—lifting a long V-shaped skin-flap in the palm, dissecting out the contracted bands, and allowing the wound to granulate. With antiseptic precautions it would be safe and may present advantages, but I judge, from the limited experience I have had, that Adams's method leaves nothing to be desired.

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